

What is claimed is:

- 1     1.     An electrical connector assembly having a first electrical connector mateable to a  
2     second electrical connector, the electrical connector assembly comprising:  
3         the first electrical connector comprising a plurality of wafers, with each of the  
4     plurality of wafers including:  
5         a first insulative housing;  
6         a plurality of first signal conductors, with each first signal conductor  
7         having a first contact end connectable to a first printed circuit board, a second  
8         contact end, and an intermediate portion therebetween that is disposed in the first  
9         insulative housing;  
10        a shield plate, the shield plate having a plurality of first contact ends  
11        connectable to the first printed circuit board, a plurality of second contact ends,  
12        and an intermediate portion therebetween that is disposed in the first insulative  
13        housing;  
14        the second electrical connector having a second insulative housing and ground  
15     conductors and second signal conductors in a plurality of rows, with each of the plurality  
16     of rows comprising:  
17         a plurality of ground conductors and second signal conductors;  
18         each second signal conductor having a first contact end connectable to a  
19         second printed circuit board, a second contact end mateable to the second contact  
20         end of one of the first signal conductors, and an intermediate portion  
21         therebetween that is disposed in the second insulative housing;

22                   each ground conductor having a first contact end connectable to the  
23                   second printed circuit board, a second contact end mateable to the second contact  
24                   end of the shield plate, and an intermediate portion therebetween that is disposed  
25                   in the second insulative housing;  
26                   the first contact end of the second signal conductor having a contact tail  
27                   and the first contact end of the ground conductor having at least two contact tails;  
28                   and  
29                   the second signal conductors and the ground conductors are positioned  
30                   adjacent to one another so that for each second signal conductor contact tail, there  
31                   are ground conductor contact tails adjacent either side of the second signal  
32                   conductor contact tail.

1    2.       The electrical connector assembly of claim 1, wherein for the second electrical  
2           connector, a distance between a second signal conductor contact tail and an adjacent  
3           ground conductor contact tail of a row is less than a distance between adjacent rows.

1    3.       The electrical connector assembly of claim 1, wherein for each of the plurality of  
2           rows of the second electrical connector, the contact tails of the second signal conductors  
3           and the ground conductors are configured to align along a line when connected to the  
4           second printed circuit board.

1    4.       An electrical connector assembly having a first electrical connector mateable to a  
2           second electrical connector, the electrical connector assembly comprising:

3           the first electrical connector comprising a plurality of wafers, with each of the  
4 plurality of wafers including:

5                 a first insulative housing;

6                 a plurality of first signal conductors, with each first signal conductor  
7 having a first contact end connectable to a first printed circuit board, a second  
8 contact end, and an intermediate portion therebetween that is disposed in the first  
9 insulative housing;

10                a shield plate, the shield plate having a plurality of first contact ends  
11 connectable to the first printed circuit board, a plurality of second contact ends,  
12 and an intermediate portion therebetween that is disposed in the first insulative  
13 housing;

14           the second electrical connector comprising:

15                 a second insulative housing including side walls and a base;

16                 a plurality of second signal conductors, with each second signal conductor  
17 having a first contact end connectable to a second printed circuit board, a second  
18 contact end mateable to the second contact end of one of the first signal  
19 conductors, and an intermediate portion therebetween that is disposed in the base  
20 of the second insulative housing;

21                 a plurality of ground conductors, with each ground conductor having a  
22 first contact end connectable to the second printed circuit board, a second contact  
23 end mateable to the second contact end of the shield plate, and an intermediate  
24 portion therebetween that is disposed in the base of the second insulative housing;

25                   the second signal conductors and the ground conductors are arranged in a  
26                   plurality of rows, with each row having second signal conductors and ground  
27                   conductors;  
28                   for each of the plurality of rows, there is a corresponding ground strip  
29                   positioned adjacent thereto disposed in the base of the second insulative housing;  
30                   and  
31                   the ground strip is electrically connected to the ground conductors of the  
32                   row.

1     5.       The electrical connector assembly of claim 4, wherein for the second electrical  
2     connector, the ground strip has a first surface facing the corresponding ground conductors  
3     of the row, and the first surface includes projections that electrically connect to the  
4     corresponding ground conductors of the row.

1     6.       The electrical connector assembly of claim 4, wherein for the second electrical  
2     connector, the ground strip has a first end and a second end, the first end and the second  
3     end being bent in the direction of the corresponding row of second signal conductors and  
4     ground conductors, and the first end of the ground strip extending beyond an end of the  
5     row and the second end of the ground strip extending beyond the other end of the row.

1     7.       The electrical connector assembly of claim 6, wherein the first end of the ground  
2     strip includes a contact tail connectable to the second printed circuit board and the second

3 end of the ground strip includes a contact tail connectable to the second printed circuit  
4 board.

1 8. The electrical connector assembly of claim 7, wherein for each of the plurality of  
2 rows, the first contact ends of the second signal conductors and the ground conductors  
3 and the contact tails of the corresponding ground strip are aligned along a line when  
4 connected to the second printed circuit board.

1 9. The electrical connector assembly of claim 8, wherein for each of the plurality of  
2 rows, the first contact end of each second signal conductor comprises a contact tail and  
3 the first contact end of each ground conductor comprises at least two contact tails so that  
4 for each second signal conductor contact tail, there are ground conductor contact tails  
5 adjacent either side of the second signal conductor contact tail.

1 10. The electrical connector assembly of claim 4, wherein for each of the plurality of  
2 rows of the second electrical connector, the first contact end of each second signal  
3 conductor comprises a contact tail and the first contact end of each ground conductor  
4 comprises at least two contact tails.

1 11. An electrical connector assembly having a first electrical connector mateable to a  
2 second electrical connector, the electrical connector assembly comprising:  
3 the first electrical connector comprising a plurality of wafers, with each of the  
4 plurality of wafers including:

5                   a first insulative housing;

6                   a plurality of first signal conductors, with each first signal conductor

7           having a first contact end connectable to a first printed circuit board, a second

8           contact end, and an intermediate portion therebetween that is disposed in the first

9           insulative housing;

10                  at least one ground member, the ground member having at least one first

11           contact end connectable to the first printed circuit board, at least one second

12           contact end, and an intermediate portion therebetween that is disposed in the first

13           insulative housing;

14                  the first insulative housing providing an area which exposes a portion of

15           the intermediate portion of the ground member;

16                  a conductive member attached to the plurality of wafers, the conductive member

17   electrically connecting to each ground member at the exposed intermediate portion of the

18   ground member;

19                  the second electrical connector having a second insulative housing and ground

20   conductors and second signal conductors in a plurality of rows, with each of the plurality

21   of rows comprising:

22                  a plurality of ground conductors and second signal conductors;

23                  each second signal conductor having a first contact end connectable to a

24           second printed circuit board, a second contact end mateable to the second contact

25           end of one of the first signal conductors, and an intermediate portion

26           therebetween that is disposed in the second insulative housing;

27               each ground conductor having a first contact end connectable to the  
28               second printed circuit board, a second contact end mateable to the second contact  
29               end of the ground member, and an intermediate portion therebetween that is  
30               disposed in the second insulative housing;  
31               the first contact end of the second signal conductor having a contact tail  
32               and the first contact end of the ground conductor having at least one contact tail;  
33               and  
34               the second signal conductors and the ground conductors are positioned  
35               adjacent to one another so that for each second signal conductor contact tail, there  
36               are ground conductor contact tails adjacent either side of the second signal  
37               conductor contact tail.

1    12.    The electrical connector assembly of claim 11, wherein for the first electrical  
2    connector, the ground member comprises a shield plate.

1    13.    The electrical connector assembly of claim 12, wherein the shield plate has first  
2    and second edges adjacent the second contact end, the first and second edges being bent  
3    in the direction of the first signal conductors of the wafer.

1    14.    The electrical connector assembly of claim 13, wherein the shield plate further  
2    includes a first plurality of the first contact ends connectable to the first printed circuit  
3    board and a second plurality of the second contact ends, the first plurality being greater in  
4    number than the second plurality.

1 15. The electrical connector assembly of claim 11, wherein for the first electrical  
2 connector, the second contact end of the ground member comprises opposing contacting  
3 members.

1 16. The electrical connector assembly of claim 11, wherein for the first electrical  
2 connector, the ground member comprises a shield strip such that there is a shield strip  
3 corresponding to each first signal conductor.

1 17. The electrical connector assembly of claim 11, wherein for the first electrical  
2 connector, the plurality of first signal conductors are configured as differential pair  
3 signals.

1 18. An electrical connector assembly having a first electrical connector mateable to a  
2 second electrical connector, the electrical connector assembly comprising:  
3 the first electrical connector comprising a plurality of wafers, with each of the  
4 plurality of wafers including:  
5 a first insulative housing;  
6 a plurality of first signal conductors, with each first signal conductor  
7 having a first contact end connectable to a first printed circuit board, a second  
8 contact end, and an intermediate portion therebetween that is disposed in the first  
9 insulative housing;



10                   at least one ground member, the ground member having at least one first  
11                   contact end connectable to the first printed circuit board, at least one second  
12                   contact end, and an intermediate portion therebetween that is disposed in the first  
13                   insulative housing;  
14                   the first insulative housing providing an area which exposes a portion of  
15                   the intermediate portion of the ground member;  
16                   a conductive member attached to the plurality of wafers, the conductive member  
17                   electrically connecting to each ground member at the exposed intermediate portion of the  
18                   ground member;  
19                   the second electrical connector having a second insulative housing and ground  
20                   conductors and second signal conductors in a plurality of rows, with each of the plurality  
21                   of rows comprising:  
22                   a plurality of ground conductors and second signal conductors;  
23                   each second signal conductor having a first contact end connectable to a  
24                   second printed circuit board, a second contact end mateable to the second contact  
25                   end of one of the first signal conductors, and an intermediate portion  
26                   therebetween that is disposed in the second insulative housing;  
27                   each ground conductor having a first contact end connectable to the  
28                   second printed circuit board, a second contact end mateable to the second contact  
29                   end of the ground member, and an intermediate portion therebetween that is  
30                   disposed in the second insulative housing;

31                   the first contact end of the second signal conductor having a contact tail  
32                   and the first contact end of the ground conductor having at least two contact tails;  
33                   and  
34                   the second signal conductors and the ground conductors are positioned  
35                   adjacent to one another so that for each second signal conductor contact tail, there  
36                   are ground conductor contact tails adjacent either side of the second signal  
37                   conductor contact tail.

1    19.    An electrical connector assembly having a first electrical connector mateable to a  
2    second electrical connector, the electrical connector assembly comprising:  
3           the first electrical connector comprising a plurality of wafers, with each of the  
4    plurality of wafers including:  
5               a first insulative housing, the first insulative housing having an attachment  
6    feature;  
7               a plurality of first signal conductors, with each first signal conductor  
8    having a first contact end connectable to a first printed circuit board, a second  
9    contact end, and an intermediate portion therebetween that is disposed in the first  
10   insulative housing;  
11              at least one ground member, the ground member having at least one first  
12   contact end connectable to the first printed circuit board, at least one second  
13   contact end, and an intermediate portion therebetween that is disposed in the first  
14   insulative housing;

15                   the intermediate portion of the ground member having at least one tab  
16           member, at least a portion of the tab member being exposed when the  
17           intermediate portion of the ground member is disposed in the first insulative  
18           housing;  
19           a conductive stiffener attached to the plurality of wafers through the attachment  
20   feature of the first insulative housing, the conductive stiffener electrically connecting to  
21   each ground member at the tab member;  
22           the second electrical connector having a second insulative housing and ground  
23   conductors and second signal conductors in a plurality of rows, with each of the plurality  
24   of rows comprising:  
25                   a plurality of ground conductors and second signal conductors;  
26                   each second signal conductor having a first contact end connectable to a  
27           second printed circuit board, a second contact end mateable to the second contact  
28           end of one of the first signal conductors, and an intermediate portion  
29           therebetween that is disposed in the second insulative housing;  
30                   each ground conductor having a first contact end connectable to the  
31           second printed circuit board, a second contact end mateable to the second contact  
32           end of the ground member, and an intermediate portion therebetween that is  
33           disposed in the second insulative housing;  
34                   the first contact end of the second signal conductor having a contact tail  
35           and the first contact end of the ground conductor having at least one contact tail;  
36           and

37                   the second signal conductors and the ground conductors are positioned  
38                   adjacent to one another so that for each second signal conductor contact tail, there  
39                   are ground conductor contact tails adjacent either side of the second signal  
40                   conductor contact tail.